

SM/01/213  
Correction 1

CONTAINS CONFIDENTIAL  
INFORMATION

August 15, 2001

To: Members of the Executive Board  
From: The Secretary  
Subject: **United States—Selected Issues**

The attached corrections to SM/01/213 (7/9/01) have been provided by the staff:

**Page 6, para. 5, line 2:** for “since the late 1980s” read “since the end of 1986”

**Page 26, para. 7, line 7:** for “A notable exception was the sharp fall”  
read “An exception was the substantial fall”  
**last line:** for “This period, however, was”  
read “The adjustment was, however, spread out over a period of  
more than three years and, moreover, the period was”

**Page 27:** Corrections carried over from previous page.

**Page 28:** Corrected due to overflow of text.

**Page 29, para. 14, line 3:** for “over time.”  
read “over time if there is no trend in the trade balance.”  
**para. 15, line 6:** remove the sentence “In 2000, the real...less than 1¼ percent.”  
**footnote 8, line 6:** for “that elasticity” read “that the elasticity”

**Page 48, para. 5, line 1:** for “did not have the authority to buy back outstanding debt”  
read “did not buy back outstanding debt in significant quantities”

**Page 49, para. 8, line 9:** remove sentence beginning “Finally, depository institutions...”

**Page 50, para. 11, line 4:** for “of repos to include term repos.”  
read “of term repos from 15 to 90 days.”

**Page 51:** Corrected due to overflow of text.

**Page 54, line 5:** for “stress, leading some” read “stress, which may lead some”  
**para. 20, line 6:** for “changed; this is reflected” read “changed at times, reflected”

**line 8:** for “also changed,” read “also varied,”

**line 10:** for “(Figure 7).” read “(Figure 7).<sup>26</sup>”

Footnote 26 reads “The change in spreads between Treasuries and other fixed-income securities partly reflects the failure of Long-Term Capital Management in 1998 which led market participants to re-evaluate financial transactions.” Subsequent footnotes renumbered accordingly.

**footnote 25:** for “January 2001.” read “February 2001.”

**Page 55:** Corrected due to overflow of text.

**Page 56, line 5:** for “ in 2006.” read “in 2006.”<sup>31</sup>

Footnote 31 reads “The foreign official demand for Treasuries could be smaller than this, especially if foreigners remain willing to move into other dollar-denominated instruments.” Subsequent footnotes renumbered accordingly.

**footnote 31, line 2:** for “Chapter VI” read “Chapter V”

**Pages 57 and 58:** Corrected due to overflow of text.

**Page 70, footnote 2, line 5:** delete “(estimated at \$50–150 billion by the Office of Management and Budget (2001a).”

**Page 77, para. 22, line 1:** for “the government’s net oil revenues accumulate”

read “the difference between the government’s net oil revenues and the non-oil fiscal deficit (i.e., the surplus on the central government budget) accumulate”

**line 7:** for “account. The”

read “account. The central bank uses a mix between internal and external management of the portfolio. The”

**line 8:** for “based on the weights of trading partners in Norway’s imports.”

read “based on a combination of import weights, GDP weights, and market capitalization weights.”

**Page 78:** Corrected due to overflow of text.

Questions may be referred to Mr. Dunaway (ext. 37343) and Ms. De Masi (ext. 38395).

Att: (17)

Other Distribution:  
Department Heads

## **I. THE CONDITION OF HOUSEHOLD, CORPORATE, AND BANK BALANCE SHEETS<sup>1</sup>**

1. During the 1990s, households and corporations increased their debt levels sharply, raising concern about their vulnerability during a prolonged economic downturn. A key factor in determining the depth and duration of the current economic slowdown rests on whether households and businesses encounter balance sheet problems which could spill over to the banking sector. Financial indicators suggest that household and corporate balance sheets generally remain healthy so far. A rise in mortgage debt accounts for much of the overall increase in household debt levels, but low unemployment and continued relatively high household net worth have meant that the credit quality of households has been solid. As long as unemployment remains relatively low, debt default is unlikely to create significant financial problems. Leverage and liquidity ratios of U.S. corporations show that the sector is in a sound position to weather the effects of the current economic slowdown, despite some concerns arising from the significant increase in corporate bond defaults and downgrades, particularly in the telecommunication sector. Similarly, the improvement of asset quality in the banking sector during the 1990s, together with strong profitability and capital ratios, should cushion the impact of the economic slowdown on financial firms.

### **A. Household Balance Sheets**

2. During the second half of the 1990s, personal saving in the United States fell to new lows, while household debt levels and net worth—through the rise in stock prices—increased dramatically (Figures 1 and 2). These developments have raised concerns that in the event of a prolonged economic downturn, the household sector could face considerable strains, and through defaulting on debt and sharply curtailing consumer spending could amplify the weakness in economic activity.

3. Rising household debt is not a new development in the United States. Household debt relative to income has been trending up since the 1950s (the earliest years for which data are available), but the trend rate of growth in debt picked up in the late 1970s, reflecting innovations in financial markets which provided households with easier access to credit (see Figure 2). Continuing this trend in the 1990s, household debt reached about 110 percent of disposable income in 2000. Other major industrial countries have also experienced a trend rise in household debt, and current household liabilities relative to disposable personal income in all major industrial countries, with the exception of France and Italy, are broadly similar to that in the United States (Table 1).

4. During the 1990s, rising mortgage debt—which accounts for about 65 percent of overall debt—explains the bulk of the increase in overall U.S. household debt (Figure 3). Factors fuelling the rise in mortgage debt in the 1990s have been low unemployment, lower

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<sup>1</sup> Prepared by Paula De Masi and Martin Kaufman.

interest rates relative to the 1980s, the rise in refinancings that allows homeowners to liquefy equity in their houses,<sup>2</sup> and the tax advantages associated with home equity loans.<sup>3</sup> In contrast, consumer debt which accounts for about 21 percent of total household debt edged up relative to personal income in the early 1990s, but has remained relatively flat in the second half of the 1990s with a trend increase in revolving consumer debt (primarily outstanding credit card balances) offset by a decrease in nonrevolving debt (consumer loans) (see Figure 3).

5. The household debt-service burden increased during the 1990s, reaching over 14 percent by the end of 2000, its highest level since the ~~late 1980s~~ end of 1986 (Figure 4). Although consumer debt is about one-third the size of mortgage debt outstanding, required payments on consumer debt are higher because of the shorter maturity structure and typically higher interest rates. Mortgage interest rates during the 1990s have trended downward so that mortgage debt service as a percent of disposable income has remained relatively flat at 5 to 6 percent of disposable income. However, the debt-service burden is not distributed uniformly across households of different income classes. Lower-income households have a much higher debt-service burden, making them and their creditors potentially more vulnerable to an economic slowdown.<sup>4</sup>

6. Despite the rise in the debt-service burden, consumer delinquencies remained relatively flat in the second half of the 1990s, but increased noticeably at the end of 2000, particularly for mortgages (Figure 5). The number of personal bankruptcies declined in 1999 and 2000, from a peak in 1998, but edged up in late 2000 and early 2001 (Figure 6).

7. Although household debt relative to disposable income increased over the 1990s, total assets rose by even more, resulting in a sharp increase in net worth that peaked at about 640 percent of disposable income in 1999, before falling in 2000, mainly because of lower

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<sup>2</sup> Particularly in 1997–99, homeowners took advantage of lower interest rates to refinance their mortgages, with many of these refinancings involving borrowing in excess of the original balance—so-called cash-out refinancings. Although there has been considerable speculation that refinancing fuelled the consumption boom, survey evidence suggests that the effect on consumption was modest, while the impact on investment spending—that is, spending on home improvements—was probably more significant. In addition, cash-out refinancing funds were also used to pay off other debts. See P. Brady, et al. (2000).

<sup>3</sup> Federal tax laws allow for interest deductibility on mortgages and home equity loans but not on credit cards or other nonmortgage debt.

<sup>4</sup> For example, households with a debt-service burden in excess of 40 percent (a level considered to be indicative of financial distress) was about 13 percent overall, but over 30 percent for households earning less than \$10,000 in 1998 (the most recent year for which data are available). See Kennickell, Starr-McCluer, and Surette (2000).

## II. SUSTAINABILITY OF THE U.S. EXTERNAL CURRENT ACCOUNT DEFICIT <sup>1</sup>

1. The rise in the U.S. external current account deficit to unprecedented levels in recent years has raised doubts about its sustainability and concerns regarding the impact that a rapid and disorderly correction of this imbalance might have. The deficit rose from 1½ percent of GDP in 1995 to 4½ percent (\$445 billion) in 2000, compared with its average during the previous two decades of 1½ percent. The financing of the deficit in 2000 absorbed an estimated 7¾ percent of the savings of the rest of the world, in contrast to the 2½ percent absorbed on average during most of the last two decades.

2. A number of observers have argued that such high levels of the deficit cannot persist for very long.<sup>2</sup> They argue that if such deficits were to continue for an extended period, U.S. external liabilities would rise to an unprecedented level, and U.S. dollar assets would represent a growing portion of world portfolios that foreign investors would be increasingly less willing to hold. This situation would run the risk of large or possibly sharp adjustments in the current account and the external value of the dollar. Such abrupt adjustments could potentially lead to substantial dislocations in the global economy and disruptions in U.S. and world financial markets.

3. Rapid U.S. GDP growth and relatively weaker growth in other parts of the world, notably Europe and Japan, contributed to the rise in the deficit. Inflows also have risen rapidly during periods of global financial stress, when the demand for dollar assets as a “safe haven” has increased. More importantly, however, there has been a surge in capital inflows seeking higher risk-adjusted real returns in the United States. Higher U.S. real returns have been related to the pickup in U.S. productivity growth since the mid-1990s. The surge in capital inflows since the mid-1990s has included, in addition to direct investment inflows, a substantial increase in portfolio inflows, of which a large share has come from the euro area (Figure 1).

4. Over the medium term, adjustment in the U.S. current account imbalance would take place if output and income growth in the United States and the other major industrial countries converge. In addition, a depreciation of the U.S. dollar in real terms is expected to contribute to the adjustment process. Such a depreciation may result from movements in relative prices if U.S. traded goods prices tend to rise more slowly than competitors’ prices. It may also come from a nominal depreciation of the dollar. At this juncture, whether there may be a large nominal decline in the dollar appears to depend significantly on expected real returns on U.S. assets, which would reflect expectations regarding the relative performance of U.S. productivity growth. The paper discusses scenarios derived from the IMF’s multi-country model (MULTIMOD) based on alternative patterns of relative productivity growth.

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<sup>1</sup> Prepared by Vivek Arora, Steven Dunaway, and Hamid Faruquee.

<sup>2</sup> See, for example, Mann (2000) and Schott (2000).

If U.S. productivity growth were to continue to substantially exceed that in other major countries, large deficits in the current account could persist for some time. Conversely, if the productivity growth gap were to narrow quickly, the nominal value of the dollar and the U.S. external imbalance could adjust rapidly.

5. Concerns regarding the long-term viability of the U.S. current account balance center on whether there exist underlying structural problems that could prevent the external balance from achieving a sustainable level. In particular, attention has been focused on the difference in estimated income elasticities of U.S. exports and imports, and the implication that this difference would perpetuate a large current account deficit in the absence of sharp and sustained declines in the real value of the dollar. However, historically, there has been no long-term trend in the real value of the dollar. This is because the difference in the estimated income elasticities for exports and imports has been offset by a tendency for U.S. incomes to grow more slowly than foreign incomes. Moreover, estimates of income elasticities for U.S. exports and imports for periods ending in the 1990s demonstrate that these elasticities appear to be converging as U.S. and foreign income growth has likewise converged.

6. Assuming that income growth in the United States and the rest of the world and income elasticities for U.S. exports and imports converge, MULTIMOD scenarios suggest that the current account deficit would decline over the longer term to around ½ percent of GDP on average (equivalent to 1 percent of rest of the world savings, a level in line with historical experience), provided the United States continues to follow prudent macroeconomic policies. The scenarios also illustrate that a higher level of national income and a more favorable external position could be achieved if the United States were to move more aggressively in the near term and run larger fiscal surpluses as a means of pre-funding part of its future liabilities associated with the aging of the population. This could be achieved by adopting, as a long-term fiscal objective, measures to eliminate the actuarial imbalances in the Social Security and Medicare programs and keeping the rest of the budget in balance over the economic cycle.

#### A. Medium-Term Adjustment

7. Over the medium term, the U.S. current account deficit is expected to narrow. Whether the adjustment in the deficit is a smooth or abrupt process is a key concern. Indeed, some observers argue that the risks arise not so much from the size of the deficit, or the outstanding U.S. net liability position, as from the suddenness of any adjustment.<sup>3</sup> The experience of recent decades suggests that, during periods of current account adjustment, movements in the external balance have typically been gradual and have been associated with relatively smooth adjustments in the real value of the dollar (Figure 2). ~~A notable exception was the sharp~~ An exception was the substantial fall in the real value of the dollar and the current account adjustment that took place during the latter half of the 1980s. This

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<sup>3</sup> Obstfeld and Rogoff (2000).

period, however, The adjustment was, however, spread out over a period of more than three years and, moreover, the period was characterized by very loose fiscal policy and the expectation that significant budget deficits would continue. The current fiscal environment is substantially different, with the prospect of continuing fiscal surpluses.

8. Over time, the relative growth performance between the United States and other countries may shift, with other countries growing relatively faster as the information-technology-driven gains in productivity of recent years spread more rapidly beyond the United States. Higher investment in information technology by other countries would boost U.S. exports, since the United States is a major supplier of this equipment. A cyclical slowing in U.S. activity relative to other countries would moderate U.S. import growth. These developments would tend to foster adjustment in the U.S. external balance.

9. Depreciation in the real value of the dollar is likely to bear the brunt of the adjustment in the external deficit, with the change coming through some combination of movements in relative prices and the nominal exchange rate. A slower rate of increase in U.S. export prices relative to competitors' prices, possibly as a result of relative gains in productivity reducing U.S. costs, would contribute toward a depreciation of the real exchange rate. At the same time, the nominal value of the dollar could depreciate over time if capital flows to the United States diminish. The speed and extent of the depreciation would be influenced by the evolution of relative productivity gains in the United States and partner countries and its implications for the pattern of net capital flows.

10. Insofar as the current account deficit and the strong value of the dollar have been largely supported by productivity improvements in the United States relative to other countries, a reversal in this factor could induce rapid external adjustment. Buoyant equity prices and capital spending in the United States have in some measure been predicated on expectations of continued strong productivity growth. A weaker outturn in productivity—at least relative to partner countries—could lower comparative rates of return, reduce the level of capital inflows, and narrow the current account deficit. As with the dollar, the nature of the adjustment in the current account could depend significantly on the rapidity of these developments. Prolonged productivity gains in the United States would be supportive of the external deficit and the value of the dollar. But relatively rapid gains in partner countries (especially if coupled with some slowdown in the United States) could induce a sharp adjustment in the dollar and the current account balance.

11. To address these questions, the staff conducted two alternative “productivity” scenarios using MULTIMOD (Table 1). In the first scenario, a positive productivity shock prolongs relative gains in the United States before catch-up in the rest of the world gradually takes place. The shock contains two components: a temporary increase in total factor productivity (TFP) growth and a temporary increase in the market value of capital.<sup>4</sup>

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<sup>4</sup> The productivity shock consists of a roughly ½ percentage point increase in the rate of total factor productivity (TFP) growth and an exogenous 1–2 percent increase in the market value  
(continued)

Together, the effects of this shock replicate qualitatively many aspects of the U.S. economy in recent years. GDP growth rises persistently above baseline; investment is the demand component that reacts most strongly, rising as a share of GDP; consumption spending also rises as private saving rates decline (albeit slightly). Meanwhile, the dollar appreciates in the near term, and the current account moves into deficit for a sustained period relative to its baseline level.

12. In the second scenario, partner countries are assumed to catch up to U.S. productivity levels relatively quickly.<sup>5</sup> In this case, the relative gains abroad contribute to a sharp depreciation of the dollar and a rapid reduction in the U.S. current account deficit. The output loss, dollar depreciation, and narrowing of the current account deficit would be more severe if the United States were also to experience a slowdown in productivity growth.

## **B. Long-Term Outlook**

13. In some quarters, concern about adjustment in the current account deficit stems from the size of the deficit and an expectation that it would persist in the absence of a large real depreciation of the dollar, owing to a significant difference in the income elasticities of U.S. imports and exports. For most of the past several decades, the income elasticity of U.S. imports has exceeded that of U.S. exports by a wide margin.<sup>6</sup> (Some other countries, notably Japan, have had the opposite pattern.) Empirically, however, the difference between a country's import and export income elasticities seems to be indirectly related to the relative rates of trend growth in domestic and foreign GDP. Over long periods of time, the income elasticities of imports and exports tend to converge toward each other as trend domestic growth converges toward that of a country's trading partners over time.<sup>7</sup>

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of capital relative to their respective baseline values. The shocks are perceived to be permanent on impact, before dissipating over a period of five years. The reason for adopting a composite shock in the scenario is that a simple TFP shock alone in MULTIMOD does not raise investment significantly relative to consumption. The second component—an additional increase in the market value of capital—raises domestic returns sufficiently to spur domestic investment to a much greater extent, as well as to induce capital inflows and a currency appreciation, in a manner similar to the experience in the United States during the second half of the 1990s.

<sup>5</sup> The results are similar if instead U.S. productivity levels fall to levels prevailing in partner countries.

<sup>6</sup> See Goldstein and Khan (1985) for a comprehensive review, and Houthakker and Magee (1969).

<sup>7</sup> See Krugman (1989). Krugman refers to the relationship between relative trade income elasticities and relative growth rates as the "45-degree rule."



14. The observation that the ratio of the income elasticity of exports to that of imports has been roughly equal to the ratio of domestic to foreign growth rates is equivalent to the observation that there have not been significant trends in real exchange rates over time if there is no trend in the trade balance. If a country's economic growth is much faster than that of its trading partners, while the income elasticities of its exports and imports are similar, a trend real depreciation would be required in order for it to find foreign markets for its output in order to balance its external position over time. Similarly, if a country's income elasticity of exports is much smaller than that of its imports, while domestic and foreign trend growth rates are similar, a real depreciation would be required over time.

15. In the United States, while real GDP growth was lower than in its trading partner countries during the 1970–2000 period, the differential narrowed substantially over time (Table 2). Indeed, during 1992–2000, a period that includes the most recent economic expansion, U.S. growth was  $\frac{1}{2}$  percentage point higher than in partner countries. Meanwhile, the real effective exchange rate, notwithstanding marked fluctuations in specific years, has not exhibited a long-term trend. ~~In 2000, the real rate was little changed from its level in 1980, having appreciated by less than  $1\frac{1}{4}$  percent.~~

16. Accordingly, during the recent period, the income elasticity of exports would be expected to have risen relative to that of imports. Estimates by the staff suggest that this does appear to have been the case during the 1990s. Exports and imports of goods and nonfactor services in constant prices were regressed against real income and relative prices, with both sets of coefficients having the expected sign (Table 3).<sup>8</sup> The results suggest that the income elasticity of exports was less than that of imports during 1975–85, but the elasticities converged subsequently at around  $1\frac{3}{4}$ , and in recent years the elasticity of exports rose further relative to that of imports. The positive serial correlation in both the export and the import equations, however, suggests an omitted variable in the equations. The addition of lagged regressors alleviates this problem somewhat but evidence of serial correlation remains. The point estimates of the elasticities should thus be interpreted with caution, but the results do suggest that the estimated income elasticities of U.S. exports and imports appear to be converging.

17. Over the longer term, if growth rates in the United States and the rest of the world converge, as do the income elasticities of U.S. imports and exports, there remains a question as to whether there may be some fundamental problem that would prevent the U.S. external

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<sup>8</sup> In the export and import equations, real income was captured by real foreign and U.S. GDP, respectively, and relative prices by the ratio of U.S. export prices to the foreign import-weighted consumer price index and the ratio of U.S. import prices to the U.S. GDP deflator. The export price elasticities are very low, and not significant at the 5 percent level for 1975–2000. An alternative specification using the foreign export deflator in place of the foreign CPI suggested that the elasticity of U.S. exports with respect to relative prices was -0.7 during 1975–2000.

balance from adjusting to a “sustainable” position. Sustainability in this context would be defined as a long-term current account balance that could be maintained without a continuing, large real depreciation of the dollar. Analysis by the staff suggests that the current account could smoothly adjust to a long-term sustainable position provided the United States continues to follow sound macroeconomic policies, with monetary policy maintaining low inflation and fiscal policy aimed at meeting the long-term financing needs of Social Security and Medicare, while keeping the rest of the budget balanced (Figures 3–6).<sup>9</sup> In this scenario, over the longer term the current account deficit would average around  $\frac{1}{2}$  percent of GDP, fluctuating within a range of 0– $2\frac{1}{2}$  percent of GDP, following a sizeable correction in the external position in the medium term (roughly the period through 2010). A U.S. deficit of this size in the long term would absorb around 1 percent of world savings, a level that would not be out of line with historical averages.<sup>10</sup>

18. With less fiscal adjustment, the improvement in the current account would be more modest than in the first scenario and the dollar somewhat more depreciated in the long run. An alternative fiscal scenario was examined in which only Social Security is put into actuarial balance and its surplus is saved. It was assumed that no measures are taken to put the Medicare HI system into actuarial balance and that the HI surplus is not saved. After the HI trust fund runs out, it was assumed that HI was financed on a pay-as-you-go basis, with the payroll tax being raised to finance benefits in each year. Nevertheless, this less-ambitious policy stance would still help reduce the current account deficit to 1–3 percent of GDP (around  $1\frac{1}{2}$  percent of GDP on average) during the longer term, although the longer-term output benefits would be smaller than in the first fiscal scenario and the degree of debt consolidation would be smaller.

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<sup>9</sup> For actuarial balance, it was assumed that Social Security and Medicare HI payroll taxes are raised such that the present value of expenditures over the 75-year horizon is not larger than the net present value of revenues, and that the trust funds have sufficient resources to cover expenditure for an additional year. See also Cerisola, Faruquee, and Keenan (1999).

<sup>10</sup> For partner countries, it is assumed that fiscal policies attain balanced budgets. The simulations also included the saving-investment balance implications of faster population aging in other industrial countries as described in Cerisola, Faruquee, and Keenan (1999).

#### **IV. IMPLICATIONS OF THE REDUCTION IN U.S. TREASURY SECURITIES FOR MONETARY POLICY AND FINANCIAL MARKETS<sup>1</sup>**

1. In the United States, as in several industrial countries, fiscal surpluses in recent years have led to a marked reduction in federal government debt (Figure 1). Prospects are for continued debt reduction over the next decade, with the Administration's budget proposal for FY 2002 envisaging an elimination of redeemable Treasury debt held by the public by FY 2011 (see Office of Management and Budget (2001)).<sup>2</sup>

2. The reduction in the supply of Treasury securities has implications for monetary policy implementation and financial markets in the United States, as well as for foreign holders of these securities. The Federal Reserve has started to adapt its operations to the reduction in Treasury securities, but further debt reduction will require a broadening in the range of instruments through which the Federal Reserve conducts monetary policy. Treasury securities perform various roles in U.S. financial markets, including as a benchmark for pricing and quoting fixed-income securities; an instrument for hedging market risk; a form of collateral; and a safe-haven asset. Alternative instruments, such as interest rate swaps, are starting to fulfill some of the roles traditionally played by Treasuries, although it is not yet clear what will substitute for Treasuries as a safe-haven asset. Foreign central banks hold a significant share of their foreign exchange reserves in the form of U.S. Treasury securities, and as the supply of Treasuries declines, they are moving toward alternative U.S. dollar assets, such as agency securities.<sup>3</sup>

##### **A. Debt Developments and Outlook**

3. The bulk of federal government debt is interest-bearing securities held by private investors, the Federal Reserve Banks (FRB), and U.S. government accounts, that are both marketable and non-marketable.<sup>4</sup> Marketable securities account for just over half of total

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<sup>1</sup> Prepared by Vivek Arora and Rodolfo Luzio.

<sup>2</sup> The U.S. fiscal year starts October 1.

<sup>3</sup> Agency securities are securities issued by Government Sponsored Enterprises (GSE)—the largest of which are the Federal National Mortgage Association (or Fannie Mae) and the Federal Home Loan Mortgage Association (or Freddie Mac)—and federal agencies, such as the Government National Mortgage Association (or Ginne Mae).

<sup>4</sup> Marketable securities can be traded after their initial purchase. New marketable securities are regularly issued in maturities ranging from 13 weeks to 30 years. They comprise bills (with initial maturity of one year or less), notes (initial maturity of 1–10 years), and bonds (over 10 years). Notes account for almost half the marketable debt outstanding, with the rest roughly evenly split between bills and bonds. Nearly all marketable debt is nominally denominated (with coupon and principal fixed in dollar terms), although the Treasury has issued some inflation-indexed debt since 1997. Most of the marketable debt is non-callable.

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federal government debt. The significance of marketable securities arises from their use in financial markets and monetary policy implementation. Gross federal government debt held by private investors fell from \$3.4 trillion (41 percent of GDP) in FY 1997 to \$2.9 trillion (29 percent of GDP) in FY 2000 (Table 1); marketable debt held by private investors declined by over \$500 billion to just under \$2.5 trillion. These declines reflected reduced domestic holdings, as foreign holdings remained unchanged at around \$1.2 trillion (Figure 2). The share of FRB holdings of marketable debt has risen steadily from below 13 percent in 1997 to over 17 percent in 2000.

4. The Treasury's debt-management strategy has evolved with the reduction in federal government debt.<sup>5</sup> In recent years, its main objectives have included avoiding a further lengthening in the average maturity of the government debt stock and maintaining liquidity in key "benchmark" issues (90- and 180-day bills; 2-, 5-, and 10-year notes; and 30-year bonds). The issuance frequencies in some maturities have been reduced (e.g., 30-year bond auctions were moved from a quarterly to a semi-annual frequency), and other maturities have been eliminated (e.g., the 1-year bill and 3-year note), allowing new security issues to be concentrated on benchmark issues.

5. Before 2000, the Treasury did not ~~have the authority to buy back outstanding debt~~ buy back outstanding debt in significant quantities, and as a result the reduction in debt associated with fiscal surpluses was all reflected in reduced debt issuance and retirement of maturing debt, resulting predominantly in a decline in shorter-maturity debt (Table 2). The average maturity of the government's debt rose, making interest costs higher than they would have been otherwise. In January 2000, the Treasury initiated a debt-buyback program, under which it began to repurchase outstanding Treasury securities in the secondary market. Consistent with the objective of preventing a lengthening in the maturity, buybacks were tilted toward longer-maturity debt. Going forward, the reduction in government debt is likely to occur across the yield curve.

6. The fiscal surpluses projected for the next decade suggest that outstanding federal government debt will fall to very low levels. It is estimated that over this period only around \$2 trillion of the \$3 trillion outstanding stock of marketable securities at end-FY 2000 will mature or be available for easy repurchase by the government.<sup>6</sup> If, in line with the

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Non-marketable securities, which cannot be traded, are mostly held in U.S. government accounts (mainly in the Social Security trust funds); a portion is held by private investors in the form of U.S. savings bonds.

<sup>5</sup> See Dupont and Sack (1999).

<sup>6</sup> The remaining, "non-redeemable" debt would comprise debt that had not yet reached maturity, was held in non-marketable forms (e.g., savings bonds), or whose repurchase would require a premium that the Treasury may consider too high.

Administration's intention, the cumulative surpluses of the Social Security trust fund amounting to \$2.6 trillion are preserved, annual unified budget surpluses by FY 2009 would start to exceed the debt available for redemption, leaving the federal government with an excess cash balance (Figure 3).

## **B. Implications for Monetary Policy Implementation**

7. The potential implications of debt reduction for monetary policy implementation arise from the key role that Treasury securities play in monetary operations. Open market operations in the United States are of two kinds:

- Permanent operations, comprising outright open market purchases, are used to meet the expanding demand for currency and reserves. Permanent operations principally involve Treasury securities.<sup>7</sup>

- Temporary operations, through repos and matched-sale-purchase transactions (MSPs), are used to move the federal funds rate toward the target rate set by the Federal Open Market Committee of the Federal Reserve. Temporary operations traditionally have been conducted using only Treasuries and agency securities as collateral. In 2000, Treasuries accounted for 89 percent of the total assets of the Federal Reserve (Table 3).

8. Additional implications of debt reduction for monetary policy implementation could arise from the role of Treasury securities during crises, their role in markets' interpretation of the stance of monetary policy, and their use in meeting reserve requirements. Treasury securities are typically the means by which the Federal Reserve eases liquidity during periods of financial stress, both by buying up Treasuries and by the fact that it accepts Treasuries as collateral for borrowing by banks. These attributes, together with the absence of credit risk, contribute to making Treasuries a "safe haven" asset in financial markets. In addition, government debt developments affect the government yield curve, an important indicator of market expectations of inflation and the monetary policy stance. ~~Finally, depository institutions in the United States are subject to a reserve requirement, part of which they fulfill by holding Treasuries.~~ When money market conditions indicate persistent reserve imbalances among depository institutions, the Federal Reserve uses outright sales or purchases of Treasury securities to drain or add reserves to the system. When they indicate temporary imbalances, repos or MSPs backed mainly by Treasuries are used.

9. In the past few years, changes in the stock of Treasuries contributed to distortions in the government yield curve, confusing market signals. The government yield curve is usually a better indicator of market conditions such as inflationary expectations than, say, the corporate yield curve, which, in addition to inflation risk, also reflects liquidity risk and

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<sup>7</sup> Under the Federal Reserve Act, the Federal Reserve is also allowed to buy agency securities, some municipal securities, foreign exchange, and sovereign debt.

credit risk. With the reduction in Treasuries, idiosyncratic factors (including scarcity at the long end) have started to influence the yield curve. The shape of the yield curve has changed frequently in recent years. From a “normal” upward slope in 1998, the curve flattened in 1999, inverted at the longer end in early 2000, and then inverted altogether in late 2000—before reverting to a normal upward slope in early 2001 (Figure 4). With the frequent changes in its shape, the yield curve has become harder to interpret as an indicator of market conditions. In addition, with a thinner market for Treasuries, small operations by the Federal Reserve can have larger-than-expected effects on interest rates.

10. Debt reduction could complicate the implementation of monetary policy well before the debt is fully paid down. In particular, as the Treasury market becomes less liquid over time, outright purchases of Treasuries by the Federal Reserve to accommodate the trend growth in currency demand may start to unduly affect market prices.<sup>8</sup> Also, reduced activity in the Treasury repo market could make it harder for these repos to be used in response to temporary imbalances in banks’ reserves.

11. The Federal Reserve has started to adapt its operations to the declining stock of government debt.<sup>9</sup> In 1999, the Federal Reserve temporarily expanded the asset class for eligible collateral in repos to include mortgage-backed securities guaranteed by a GSE or federal agency, and expanded the eligible maturity of ~~repos to include term repos term repos~~ from 15 to 90 days.<sup>10</sup> These changes have facilitated an increased reliance on the use of temporary operations and minimized disruptions in monetary policy operations. In 2000, the Federal Reserve met part of the demand for reserves through longer-term repos rather than outright purchases of Treasuries. In addition, a legal revision in 2000 allowed the Federal Reserve to use discount loans to banks as backing for paper currency. Since Treasuries are the principal asset-backing currency, the revision effectively allowed the Federal Reserve to reduce its holdings of Treasuries.<sup>11</sup>

12. Furthermore, in July 2000, the Federal Reserve instituted self-imposed limits on its holdings of individual Treasury security issues as a proportion of the outstanding amounts of the issues. The limits range from 35 percent for Treasury bills to 15 percent for longer-term

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<sup>8</sup> See Federal Reserve Board (2001).

<sup>9</sup> For further discussion of the U.S. experience, see Fleming, Hall, and Krieger (2000), and Reinhart and Sack (2000).

<sup>10</sup> These temporary measures initially extended through January 2001, at which time they were renewed.

<sup>11</sup> The revision was not, however, made in response to the falling stock of Treasuries, but rather was in response to a decline in banks’ reserve deposits at the Federal Reserve, which led to a reduction in permissible assets to back currency issuance.

bonds. To keep within the limits, the Federal Reserve has from time to time redeemed some of its holdings of Treasuries, whenever the amount of maturing holdings has exceeded the amount that could be rolled over into newly issued Treasuries within the set limits.<sup>12</sup>

13. Despite these temporary measures, the prospect of continued debt reduction suggests that the Federal Reserve's limits will become binding significantly earlier than the date by which the redeemable debt will be eliminated. Estimates of the slack remaining under the limits are in the range of only about \$230 billion as of early 2001 (Table 4). In the next few years, if the Federal Reserve continues to purchase Treasuries in order to expand its balance sheet in line with nominal growth in the economy, and if the Treasury reduces debt proportionately across maturities as fiscal surpluses accumulate, the ceilings could be reached by FY 2003.<sup>13</sup>

14. The Federal Reserve is examining several possible adaptations to its monetary operations.<sup>14</sup> For the near term, one possibility being considered is a further expansion of the class of eligible collateral for repos to include certain debt obligations of U.S. states and foreign governments.<sup>15</sup> In the longer term, the Federal Reserve has identified several issues for further study, including whether it should expand the use of the discount window for depository institutions (the current alternative to open market operations for injecting liquidity). One approach would be to auction discount loans to financially sound depository institutions, although such a program would have to be structured to take account of moral hazard, specifically to prevent certain institutions from becoming unduly dependent on such loans or from taking excessive risk. Furthermore, the process of credit allocation through the discount window is currently kept separate from day-to-day monetary policy implementation (through open market operations), helping to keep such operations free from direct pressure to bail out troubled financial institutions. Heavy reliance on the discount window would eliminate this implicit firewall.<sup>16</sup> Another issue for further study is whether there are merits in relying more heavily on temporary short-term transactions in a broader range of assets (in the form of both repos with security dealers and discount window loans to depository institutions) as compared with outright purchases of such a range of assets.<sup>17</sup>

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<sup>12</sup> See Greenspan (2001a).

<sup>13</sup> See Folkerts-Landau, Garber, and Dinmore (2001).

<sup>14</sup> See Greenspan (2001b).

<sup>15</sup> As noted, the Federal Reserve has statutory authority under the Federal Reserve Act to transact in these assets, but it has traditionally not used them in open market operations.

<sup>16</sup> See Gertler (2000).

<sup>17</sup> See Federal Reserve Board (2001).

15. A key issue is whether it will eventually be necessary for the Federal Reserve to seek to acquire a wider range of assets in its open market operations. Both international and historical U.S. experience suggest that such instruments have on occasion been used successfully. In principle, open market operations can be based on any highly rated, liquid asset rather than only on government securities. Cross-country experience does indeed suggest that monetary policy operations need not be based only on government securities. In the euro area, open market operations by the European System of Central Banks (ESCB) are based on a range of assets, so-called “tier one” and “tier two” assets, which must fulfill certain criteria (such as meeting high credit standards) but are not restricted to government securities.<sup>18</sup> In the United Kingdom, the class of eligible securities for monetary operations by the Bank of England includes, in addition to various government securities, securities accepted by the ESCB and eligible bank bills. Even in the United States, before 1932 the Federal Reserve was not allowed to use government securities to back the currency and instead transacted in eligible commercial paper and bankers’ acceptances.<sup>19</sup>

16. The use of non-Treasury securities would seem to be viable from the perspective of monetary operations, but it raises a few broader policy questions. The selection of a particular non-government security would confer the security with a special status in the market, providing the issuer with an indirect advantage that may or may not be desirable from a broader policy perspective. In the context of the GSEs, for example, a concern has been that their special status might divert additional resources into one sector (housing). Furthermore, with the use of private securities as collateral for repos, the Federal Reserve would have less control over the composition of the collateral on its books, and dealers typically would post the assets (within the eligible class) they value the least.<sup>20</sup>

17. In addition, the Federal Reserve would start to bear credit risk, especially if it were to hold non-Treasury securities outright. Although credit risk would not affect monetary

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<sup>18</sup> The most important instruments are refinancing operations in the form of reverse transactions, which are conducted on the basis of either repurchase agreements or collateralized loans. In addition to refinancing operations, the ESCB may use outright transactions, issuance of debt certificates, foreign exchange swaps, and collection of fixed-term deposits. However, these additional instruments have not yet been used. For details, see European Central Bank (1998).

<sup>19</sup> The Federal Reserve also transacted in gold, since the United States was on the gold standard at the time. See Meltzer (2001).

<sup>20</sup> The effects on the Federal Reserve’s balance sheet would be mitigated to some extent by marking to market of collateral. The Federal Reserve has noted in addition that the use of private securities in open market operations raises risk management and accounting questions that need to be studied further, as well as the question of whether their introduction should be incremental or rapid.



operations (because the monetary injection is completed with the open market purchase), it could have other implications, including the remote possibility of a need to recapitalize the Federal Reserve in the event of widespread defaults. Also, monetary operations currently involve substitution between two assets (cash and Treasuries), both of which are free of credit risk. The introduction of a risky asset could influence private capital allocation.<sup>21</sup> Furthermore, the Federal Reserve would have to incur costs associated with evaluating asset values and creditworthiness. Finally, when the status of a particular asset or loan in the Federal Reserve's portfolio deteriorates, requiring it to be sold or not rolled over, political or supervisory considerations may not always allow the Federal Reserve to sell the asset or call the loan.<sup>22</sup>

### **C. Financial Market Implications**

18. A reduction in government debt has the potential to affect financial markets because of the key roles that government securities play in most countries with mature financial systems:<sup>23</sup>

- Government bonds represent the main benchmark asset against which other fixed-income assets are priced.
- Government bond yields are used as the risk-free rate in many valuation decisions and are also used as a reference rate against which yields on other fixed-income securities are quoted.
- Government bonds are important vehicles for hedging private sector credit risk, and, in addition, are used in day-to-day liquidity management and as collateral.
- Finally, government bonds represent a "safe haven" during periods of market turmoil, and their value in such situations is enhanced by the fact that central banks typically ease liquidity by buying up government securities.

19. In U.S. financial markets, the shrinking supply of Treasury securities has already led to substantial changes in the instruments used by market participants for various purposes. For pricing and quoting private fixed-income instruments, hedging market risks, and to some extent in collateralizing counterparty risks, market participants have shifted significantly to private financial instruments (mainly interest-rate swaps). In some of the other roles played by Treasuries, there is a concern that private securities may not be able to substitute

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<sup>21</sup> See Greenspan (2001c).

<sup>22</sup> See Broaddus and Goodfriend (2001).

<sup>23</sup> This section draws on Schinasi, Kramer, and Smith (2001).

adequately. First, a comparable security to substitute for the role of Treasuries as domestic and international safe havens is difficult to envision at this stage. Second, private securities include an element of credit risk, and it may take time before market participants come to accept them as universal collateral in place of Treasuries. Also, they have not been tested in times of stress, leading-which may lead some market participants to move toward cash (bank deposits) as an alternative collateral to Treasuries. Third, for some types of institutional investors, such as pension funds and insurance companies, which have a substantial demand for relatively safe long-term investments, private substitutes may not be available in sufficient volume to adequately replace long-term government securities.<sup>24</sup>

20. The reduction in federal debt since 1998 has affected financial markets in several dimensions. Liquidity in the government securities' market has declined across maturities, reflected in lower trading volumes (Figure 5). The cost of borrowing in the repo market has increased since early 2000, partly reflecting the increased scarcity of the one-year Treasury bill, which was used as collateral on overnight repos (Figure 6).<sup>25</sup> The relationship among different Treasury securities has changed; this is at times, reflected most visibly in the yield-curve inversion in 2000. The relationship between Treasuries and other fixed-income securities has also changed-varied, with the spreads between interest rate swaps, agency securities, and corporate debt versus the ten-year Treasury note all widening since 1998, as well as becoming more volatile (Figure 7).<sup>26</sup> In addition, the correlation of private fixed-income yields with Treasury yields has declined while their correlation with swap rates has been rising.

21. The greater disparity between the performance of Treasuries and other fixed-income securities has reduced the usefulness of Treasuries as a reference rate and a hedging vehicle. At the long end, the decline in liquidity of the 30-year Treasury bond has resulted in higher and more volatile spreads vis-à-vis other 30-year securities, reducing its reference and hedging role in this segment. With the changing yield curve, it has proved difficult to find an alternative Treasury security with which to proxy the 30-year Treasury yield.

22. Financial markets have started to assess the usefulness of alternative instruments as benchmarks. The main alternative instruments are interest rate swaps, agency securities, and corporate debt, with interest rate swaps appearing to be the favored alternative at present.<sup>27</sup>

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<sup>24</sup> If the supply of Treasuries declines substantially, these investors may simply need to manage greater mismatches between their assets and liabilities.

<sup>25</sup> The one-year Treasury bill stopped being issued in ~~January~~February 2001.

<sup>26</sup> The change in spreads between Treasuries and other fixed-income securities partly reflects the failure of Long-Term Capital Management in 1998 which led market participants to re-evaluate financial transactions.

<sup>27</sup> See Fleming (2000) and Zamsky (2000).

Swap rates have tended to move closely with other fixed-income yields, increasing their attractiveness for referencing and hedging. Fixed-income positions are often hedged using interest rate swaps, several corporate issues have been priced off swap rates, and swap rates are increasingly being used to evaluate other fixed-income securities. The predominance of swaps is consistent with the experience in the euro area, where there is no uniform government asset to play a benchmark role and where pricing and hedging are typically done with swaps. Swaps are not, however, a perfect substitute for Treasuries. Being bilateral contracts for a fixed period of time, they are costly to unwind. In addition, given that they are over-the-counter instruments, they are not as widely accessible as Treasuries and are confined to large corporations and financial institutions.<sup>28</sup>

23. Agency debt is increasing in importance, although its liquidity remains much lower than that of Treasuries (Table 5). Since 1998, agencies have increased issuance of “benchmark” securities, which mimic many of the features of Treasuries. Agency yields have indeed moved closely with other fixed-income yields (Figure 7), and there is an active repo market and a developing futures market. High-rated corporate debt used to be the main long-term benchmark in U.S. financial markets before the introduction of 30-year Treasuries in the mid-1970s. Although such debt is sometimes used for pricing and hedging, it is not a practical alternative to Treasuries, since few issues are actively traded. In addition, individual issues are subject to credit risk and although there is an active repo market, there is no futures market.

#### **D. International Implications**

24. A reduction in U.S. government debt has the potential to affect other countries through several channels, including the role of Treasuries as a component of foreign central banks’ international reserves, as a means of settlement for international transactions in goods and services, and as safe haven assets in international financial markets. Foreign holdings of U.S. Treasuries account for over one-fifth of the total and are roughly evenly split between central banks and the private sector.<sup>29</sup>

25. Foreign central banks hold the bulk of their official foreign exchange reserves in U.S. dollars,<sup>30</sup> and nearly 60 percent of the dollar reserves are held in the form of Treasuries. A fall in the supply of Treasuries has implications for central banks’ reserve management, and in turn for the foreign demand for U.S. financial assets. A key question is whether central banks will shift the composition of their reserves toward other U.S. assets or whether they will move away from U.S. assets altogether. Thus far, they appear to be shifting toward other

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<sup>28</sup> Steps that would widen the tradability and accessibility of swaps could include the establishment of a clearing house as well as of a swap futures market.

<sup>29</sup> See Fung and McCauley (2001).

<sup>30</sup> Fung and McCauley (2000) estimate the proportion at over three quarters.

U.S. assets, mainly agency securities. Moreover, the move toward non-Treasury U.S. assets began even before debt reduction was speeded up through buybacks (Table 6). To the extent that central banks do hold some Treasuries, and that they manage their portfolios much less actively than other foreign investors, their demand would contribute to reducing market liquidity. In recent years, foreign official holdings of Treasury securities have been equivalent to about 2½ percent of the financial transactions of the rest of the world, as proxied by the rest of the world's current and capital account flows (Figure 8). On this basis, foreign official demand for Treasuries would rise from about \$600 billion in 2000 to nearly \$950 billion in 2006.<sup>31</sup>

26. Other factors also will influence the foreign demand for U.S. Treasuries. In several economies (e.g., Hong Kong SAR, Singapore) the authorities have continued to issue government bonds even in the absence of a financing need, in part to continue to provide fixed-income markets with government benchmarks.<sup>32</sup> In Hong Kong SAR and Singapore, the proceeds of such "overfunding" are invested in foreign currency assets. To the extent that this includes U.S. Treasury securities, it accelerates the decline in the stock of Treasuries in private hands.<sup>33</sup> In addition, as the stock of Treasuries declines, foreign fiscal authorities will, like central banks, need to consider alternative investment vehicles.

27. The international demand for U.S. Treasuries as safe-haven assets may be influenced by the debt reduction, which could potentially influence international safe-haven flows. The main questions include whether such flows will continue to be directed toward U.S. assets, what the alternative U.S. assets might be, and whether the volume of flows is likely to be affected. It is possible that private investors will increase their demand for agency securities, for which there are deep and liquid markets and which have only a thin sliver of credit risk. However, without any recent experience of significant financial stress, it is difficult to answer these questions definitively and several outcomes are possible.

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<sup>31</sup> The foreign official demand for Treasuries could be smaller than this, especially if foreigners remain willing to move into other dollar-demonimated instruments.

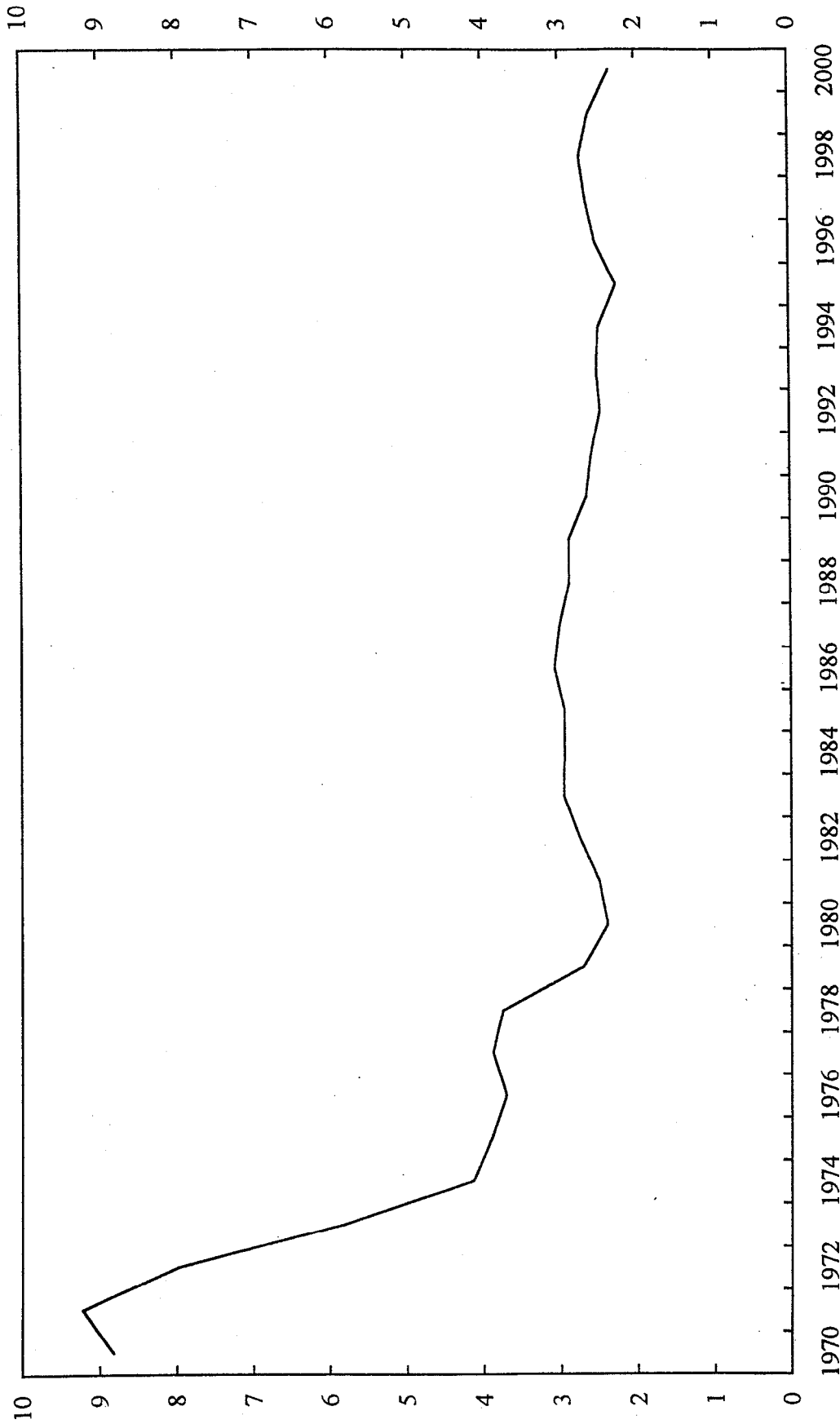
<sup>32</sup> See Fung and McCauley (2000).

<sup>33</sup> The choice of assets in which to invest such proceeds is a separate policy issue, which is discussed in ~~Chapter VI~~Chapter V of the selected issues paper.

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Figure 8. United States: Foreign Official Holdings of U.S. Treasuries/Gross Financial Transactions  
of the Rest of the World  
(In percent)



Sources: U.S. Treasury Bulletin; and World Economic Outlook.

**V. INVESTING GOVERNMENT ASSETS IN PRIVATE SECURITIES:  
POLICY OPTIONS AND INTERNATIONAL EXPERIENCE<sup>1</sup>**

1. In its FY 2002 Budget, the Administration projects that during FY 2002–11 the cumulative unified federal budget surplus after tax cuts and other proposed measures would be \$3½ trillion, with \$2½ trillion of this amount representing the prospective cumulative surplus in the Social Security trust fund. Net federal government debt owed to the public, however, is estimated to be \$3 trillion at the end of FY 2001, and only \$2 trillion of this is considered by the Administration to be redeemable over the next decade.<sup>2</sup> If at a minimum the Social Security surplus is preserved, then a policy decision has to be made on alternative means of investing the remaining funds (just over \$½ trillion). In addition, if the prospective surplus of the Medicare Hospital Insurance (HI) trust fund (another \$½ trillion) were also preserved, the total assets that would need to be invested would be just over \$1 trillion.<sup>3</sup>
2. Over the coming decade, the prospect of U.S. budget surpluses that exceed the amount of redeemable outstanding Treasury debt raises the question of alternative uses for the excess funds. The main alternatives are to slow the pace of debt reduction by reducing taxes and/or raising government expenditure or to invest the funds in private assets. A slower pace of debt reduction would preclude the concerns raised by government ownership of private assets, but in view of the coming wave of unfunded liabilities associated with the aging of the population, it would require a sharper increase in future taxes and government debt or larger cuts in benefits and other spending in future decades.
3. The prospect of government investment in private assets has raised several concerns, including the vulnerability of such investment to political pressures and its potentially large

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<sup>1</sup> Prepared by Vivek Arora and Steven Dunaway.

<sup>2</sup> The roughly \$1 trillion in remaining debt would largely consist of marketable bonds that have not matured (\$0.8 trillion) and non-marketable debt such as savings bonds and special bonds for state and local governments. Debt reduction could in principle encompass the non-matured marketable debt through buybacks by the Treasury, but this could entail paying a significant premium to bondholders (~~estimated at \$50–150 billion by the Office of Management and Budget (2001a)~~). Such large premiums are viewed as a cost that exceeds the value of retiring the debt before maturity (Greenspan (2001a)). Estimates of the irredeemable debt depend on a number of assumptions, including the size of future buybacks and when sales of longer-maturity debt cease. Depending on these assumptions, estimates of the irredeemable debt are typically in the \$¾–1¼ trillion range.

<sup>3</sup> It is appropriate to focus on the excess of the trust fund surpluses, rather than of the whole budget surplus, over the redeemable debt since the non-trust-fund surplus (and perhaps even a part of the HI surplus) is likely to be used to pay for the Administration's expenditure priorities and possibly for the enacted tax cut.



20. In some countries, the objectives of public pension plans' investments in private securities have sometimes also been influenced by factors not directly related to risk-return considerations, including, for example, subjective ethical criteria, stock market stabilization, and industrial policy.<sup>17</sup> In the United Kingdom, pension funds are required to disclose whether their portfolio decisions take into account environmental and social effects. In Hong Kong SAR, Japan, and Taiwan Province of China, public funds have been used, or actively considered, for stabilizing the stock market.<sup>18</sup>

21. Singapore and Hong Kong SAR provide examples of "overfunding" of the government budget, where government bonds are issued in the absence of a financing need in part to provide liquidity in key benchmark assets to facilitate the development of local financial markets.<sup>19</sup> As of mid-2000, the Singapore government and the Hong Kong Monetary Authority had built up outstanding balances of US\$20 billion and US\$14 billion of government and Exchange Fund paper, respectively, partly to serve as benchmarks. The proceeds of this overfunding in both cases have been placed in foreign currency assets.

22. In Norway, the difference between the government's net oil revenues and the non-oil fiscal deficit (i.e., the surplus on the central government budget) accumulate in the State Petroleum Fund (SPF).<sup>20</sup> The assets of the SPF are managed by the central bank under delegation from the ministry of finance. The assets are invested in foreign securities in order to prevent oil exports from leading to excessive exchange rate appreciation ("Dutch disease"). Investing in foreign securities also precludes any political pressure that may arise from investing SPF monies onshore. Formally, the SPF is a local-currency account in the central bank, and the central bank manages a portfolio of foreign assets against this account. The central bank uses a mix between internal and external management of the portfolio. The currency composition of the foreign portfolio is based on the weights of trading partners in Norway's imports a combination of import weights, GDP weights, and market capitalization weights. The portfolio initially comprised only fixed-income securities, but in order to provide more stable long-term returns it has been broadened since 1998 to include equities, which account for 30–50 percent of SPF assets. Equity investments are based on a mix between active and passive management, with passive management replicating the stock indexes in major equity markets.

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<sup>17</sup> See, for example, MacLean (2000).

<sup>18</sup> MacLean (2000) notes that political pressure to stabilize the stock market may be related to the size of public pension funds invested in equities. However, as noted, this is envisaged to be relatively small in the United States.

<sup>19</sup> See McCauley and Remolona (2000).

<sup>20</sup> See Davis et al. (2001).

23. A key operational principle of the Norwegian SPF is transparency. The central bank is required by law to provide information on the fund's management to the public. Comprehensive accounts and data on the SPF's operations are regularly available, and quarterly and annual reports provide detailed financial information. The SPF's accounts are regularly audited, and the reports are made public. Transfers to and from SPF need parliamentary approval, and SPF operations are incorporated into the fiscal accounts.

24. The experience of the Alberta Heritage Savings Fund (AHSF) in Canada, before its reform in 1997, illustrates some of the problems that can arise with public trust fund investments.<sup>21</sup> The AHSF was established in 1976 to manage Alberta's resource-based revenues. Until 1997, its objectives included several social goals in addition to the generation of revenues in preparation for any future decline in resource-based income. A small part of the AHSF was invested in private securities with the expectation of earning a commercial rate of return, but the bulk of the fund was invested in local public and private securities with the objective of strengthening the provincial economy rather than earning a commercial return. In addition, some assets were lent to provincial governments or government agencies at concessional rates, as well as invested in long-term public works projects of benefit to the local community but without emphasis on financial return. During 1987–97, all income (including capital gains) was transferred to the provincial budget to finance government programs and services, which, together with the investment in public projects, led to a steady erosion in the value of the fund. In 1997, the mandate of the AHSF was streamlined to focus on improving financial returns, and the fund was no longer used to finance government investment or social projects. Its assets subsequently have been invested in bonds, real estate, domestic and foreign equities, and other financial instruments.<sup>22</sup>

### **C. Experience in the United States**

25. In the United States, there are examples of public funds being invested in private assets in the form of state resource-based trust funds, state and local pension plans, and a federal employees' pension plan. The Alaska Permanent Fund (APF) was established in 1976 to manage the government's oil and gas royalties.<sup>23</sup> The objectives were in part to generate income and capital gains to provide for the time when oil revenues diminished and to distribute some of the wealth gains to the people of the state. The APF derives revenue mainly from dedicated oil revenues and legislative appropriations, and it distributes dividends each year to Alaskan citizens. The performance benchmarks cover rates of return and risk management, and require public transparency and accountability. Its asset allocation targets cover real estate (9 percent), U.S. equities (37 percent), foreign equities (19 percent),

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<sup>21</sup> See Warrack and Keddle (1999).

<sup>22</sup> See Alberta Revenue (2001).

<sup>23</sup> See Warrack and Keddle (1999).